Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 (previously presented). A method for structuring video by probabilistic merging of video segments, said method comprising the steps of:

a) obtaining a plurality of frames of unstructured video;

b) generating video segments from the unstructured video by detecting shot boundaries based on color dissimilarity between consecutive frames;

c) extracting a feature set by processing pairs of said segments, said extracting generating an inter-segment color dissimilarity feature and an inter-segment temporal relationship feature of each said pair of segments, said inter-segment temporal relationship feature including metrics of temporal separation between the segments of the respective said pair and accumulated duration of the segments of the respective said pair; and

d) merging video segments with a merging criterion that applies a probabilistic analysis to the features of the feature set, thereby generating a merging sequence representing the video structure.

2 (cancelled).

3 (previously presented). The method as claimed in claim 23 wherein the difference signal is based on a mean dissimilarity determined over a plurality of frames centered on one of the consecutive frames.

4 (previously presented). The method as claimed in claim 23 further including the step of morphologically transforming the threshold difference signal with a pair of structuring elements that eliminate the presence of multiple adjacent shot boundaries.

5 (original). The method as claimed in claim 1 wherein the processing of pairs of segments for visual dissimilarity in step c) comprises the steps of computing a mean color histogram for each segment and computing a visual dissimilarity feature metric from the difference between mean color histograms for pairs of segments.

6 (previously presented). The method as claimed in claim 7 wherein the processing of pairs of segments for their temporal relationship in step c) comprises the processing of pairs of segments for a temporal separation between pairs of segments and for an accumulated temporal duration of pairs of segments.

7 (previously presented). A method for structuring video by probabilistic merging of video segments, said method comprising the steps of:

a) obtaining a plurality of frames of unstructured video;

b) generating video segments from the unstructured video by detecting shot boundaries based on color dissimilarity between consecutive frames;

c) extracting a feature set by processing pairs of said segments, said extracting generating an inter-segment color dissimilarity feature and an inter-segment temporal relationship feature of each said pair of segments; and

d) merging video segments with a merging criterion that applies a probabilistic analysis to the features of the feature set, thereby generating a merging sequence representing the video structure;

wherein step d) comprises the steps of:

generating parametric mixture models to represent class-conditional densities of inter-segment features of the feature set, said parametric mixture models being statistical models; and

applying the merging criterion to the parametric mixture models.

8 (original). The method as claimed in claim 7 wherein step d) is performed in a hierarchical queue and comprises the steps of:

initializing the queue by introducing each feature into the queue with a priority equal to the probability of merging each corresponding pair of segments;

depleting the queue by merging the segments if the merging criterion is met; and

updating the model of the merged segment and then updating the queue based upon the updated model.

9 (original). The method as claimed in claim 1 wherein representing the merging sequence is represented in a hierarchical tree structure.

10 (previously presented). A computer storage medium having instructions stored therein for causing a computer to perform the acts of:

generating video segments from unstructured video by detecting shot boundaries based on color dissimilarity between consecutive frames;

extracting a feature set by processing pairs of segments, said extracting generating an inter-segment color dissimilarity feature and an inter-segment temporal relationship feature of each said pair of segments; and

merging video segments with a merging criterion that applies a probabilistic analysis to the features of the feature set, thereby generating a merging sequence representing the video structure;

wherein said merging further comprises the steps of:

generating statistical models of the feature set; and

applying the merging criterion to the statistical models.

11 (previously presented). A method for structuring video by probabilistic merging of video segments, said method comprising the steps of:

a) obtaining a plurality of frames of unstructured video;

b) generating video segments from the unstructured video by detecting shot boundaries based on color dissimilarity between consecutive video frames;

c) extracting a feature set by processing pairs of segments, said extracting generating an inter-segment color dissimilarity feature and an inter-segment temporal relationship feature of each said pair of segments;

d) generating a parametric mixture model of the inter-segment features comprising the feature set, said parametric mixture model being a statistical model; and

e) merging video segments with a merging criterion that applies a probabilistic Bayesian analysis to the parametric mixture model, thereby generating a merging sequence representing the video structure.

12 (original). The method as claimed in claim 11 wherein the processing of pairs of segments for visual dissimilarity in step c) comprises the steps of computing a mean color histogram for each segment and computing a visual dissimilarity feature metric from the difference between mean color histograms for pairs of segments.

13 (previously presented). The method as claimed in claim 11 wherein the processing of pairs of segments for their temporal relationship in step c) comprises the processing of pairs of segments for a temporal separation between pairs of segments and for an accumulated temporal duration of pairs of segments.

14 (original). The method as claimed in claim 11 wherein the parametric mixture model generated in step d) represents class-conditional densities of the inter-segment features comprising the feature set.

15 (original). The method as claimed in claim 11 wherein step e) is performed in a hierarchical queue and comprises the steps of:

initializing the queue by introducing each feature into the queue with a priority equal to the probability of merging each corresponding pair of segments;

depleting the queue by merging the segments if the merging criterion is met; and

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updating the model of the merged segment and then updating the queue based upon the updated model.

16 (original). The method as claimed in claim 11 wherein the merging sequence is represented in a hierarchical tree structure that includes a frame extracted from each segment and displayed at each node of the tree.

17 (previously presented). A computer storage medium having instructions stored therein for causing a computer to perform acts for structuring video by probabilistic merging of video segments, the acts including:

obtaining a plurality of frames of unstructured video;

generating video segments from the unstructured video by detecting shot boundaries based on color dissimilarity between consecutive video frames;

extracting a feature set by processing pairs of segments, said extracting generating an inter-segment color dissimilarity feature and an inter-segment temporal relationship feature of each said pair of segments;

generating a parametric mixture model of the inter-segment features comprising the feature set, said parametric mixture model being a statistical model; and

merging video segments with a merging criterion that applies a probabilistic Bayesian analysis to the parametric mixture model, thereby generating a merging sequence representing the video structure.

18 (previously presented). A method for structuring video by probabilistic merging of video segments, said method comprising the steps of:

a) obtaining a plurality of frames of unstructured video;

b) generating video segments from the unstructured video by detecting shot boundaries based on color dissimilarity between consecutive video frames;

c) extracting a feature set by processing pairs of segments, said extracting generating an inter-segment color dissimilarity feature and an inter-segment temporal relationship feature of each said pair of segments;

d) merging adjacent video segments with a merging criterion that applies a probabilistic Bayesian analysis to parametric mixture models derived from the feature set, said parametric mixture models being statistical models, thereby generating a merging sequence; and

e) representing the merging sequence in a hierarchical tree structure.

19 (original). The method as claimed in claim 18 wherein representing the merging sequence in a hierarchical tree structure includes displaying a frame extracted from each segment.

20 (previously presented). A computer storage medium having instructions stored therein for causing a computer to perform probabilistic merging of video segments, said instructions performing the acts of:

a) obtaining a plurality of frames of unstructured video;

b) generating video segments from the unstructured video by detecting shot boundaries based on color dissimilarity between consecutive video frames;

c) extracting a feature set by processing pairs of segments, said extracting generating an inter-segment color dissimilarity feature and an inter-segment temporal relationship feature of each said pair of segments;

d) merging adjacent video segments with a merging criterion that applies a probabilistic Bayesian analysis to parametric mixture models derived from the feature set, said parametric mixture models being a statistical models, thereby generating a merging sequence; and

e) representing the merging sequence in a hierarchical tree structure.

21 (previously presented). A method for structuring video by probabilistic merging of video segments, said method comprising:

generating video segments from an unstructured plurality of video frames by detecting shot boundaries based on color dissimilarity between consecutive frames;

extracting a feature set by processing pairs of segments, said extracting generating an inter-segment color dissimilarity feature and an inter-segment temporal relationship feature of each said pair of segments, said inter-segment temporal relationship feature including metrics of temporal separation between the segments of the respective said pair and accumulated duration of the segments of the respective said pair;

merging the video segments with a merging criterion that applies a probabilistic analysis to the feature set, thereby generating a merging sequence representing the video structure, the merging being independent of any empirical parameter determination; and

generating a hierarchy with the merged video segments, the hierarchy having a merging sequence represented by a binary partition tree.

22 (previously presented). The method as claimed in claim 21 wherein the merging the video segments includes maximizing the a posteriori probability mass function of a binary random variable that represents inter-segment features of the video segments.

23 (previously presented). The method as claimed in claim 1 wherein step b) comprises the steps of:

generating color histograms from the consecutive frames;

generating a difference signal from the color histograms that represents the color dissimilarity between consecutive frames; and

thresholding the difference signal based on a mean dissimilarity determined over a plurality of frames, thereby producing a signal that indicates an existence of a shot boundary.

24 (previously presented). The method as claimed in claim 1 wherein said extracting of said inter-segment temporal relationship feature of each said pair of segments including determining a number of frames separating the respective said pair of segments and determining an accumulated number of frames in said segments of the respective said pair of segments.

25 (previously presented). The method as claimed in claim 1 wherein step d) comprises the steps of:

generating parametric mixture models to represent class-conditional densities of inter-segment features of the feature set, said parametric mixture models being statistical models; and

applying the merging criterion to the parametric mixture models.

26 (previously presented). The method as claimed in claim 25 wherein step d) is performed in a hierarchical queue and comprises the steps of:

initializing the queue by introducing each feature into the queue with a priority equal to the probability of merging each corresponding pair of segments;

depleting the queue by merging the segments if the merging criterion is met; and

updating the model of the merged segment and then updating the queue based upon the updated model.

27 (previously presented). A method for structuring video by probabilistic merging of video segments, said method comprising the steps of:

generating video segments from a plurality of frames of unstructured video by detecting shot boundaries based on color dissimilarity between consecutive frames;

computing an inter-segment color dissimilarity feature and an inter-segment temporal relationship feature of each said pair of segments, said inter-segment temporal relationship feature including metrics of temporal separation between the segments of the respective said pair and accumulated duration of the segments of the respective said pair; and

d) merging video segments with a merging criterion that applies a probabilistic analysis to said features, thereby generating a merging sequence representing the video structure.

28 (previously presented). The method of claim 27 wherein said computing of said inter-segment temporal relationship feature of each said pair of segments further comprises determining a number of frames separating the respective said pair of segments and determining an accumulated number of frames in said segments of the respective said pair of segments.

29 (previously presented). A method for structuring video by probabilistic merging of video segments, said method comprising the steps of:

obtaining a plurality of frames of unstructured video;

generating video segments from the unstructured video by detecting shot boundaries based on color dissimilarity between consecutive frames;

extracting an inter-segment color dissimilarity feature and an inter-segment temporal relationship feature of each said pair of segments, said extracting of said inter-segment temporal relationship feature of each said pair of segments including determining a number of frames separating the respective said pair of segments and determining an accumulated number of frames in said segments of the respective said pair of segments; and

merging video segments with a merging criterion that applies a probabilistic analysis to the features of the feature set, thereby generating a merging sequence representing the video structure.